

STUDIES ON CRUCIFERAE: III. *HEMICRAMBE TOWNSENDII* NOM. NOV. AN EXAMPLE OF GEOGRAPHIC DISJUNCTION

by

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Abstract. The high similarity between *Hemicrambe fruticulosa* Webb and the recently discovered *Fabrisinapis fruticosus* Townsend suggests a common generic treatment. A new name, *Hemicrambe townsendii* is proposed for the second taxon. The huge distance (6,900km) between the areas of both species, provides an interesting case of geographic disjunction.

Resumen. Se compara la especie *Hemicrambe fruticulosa* Webb de las montañas de Tánger con la planta recientemente descubierta en la isla de Socotora y descrita con el nombre de *Fabrisinapis fruticosus* Townsend. La gran similitud entre ambas sugiere un tratamiento genérico común, por lo que se propone el nuevo nombre *Hemicrambe townsendii* para la segunda. La enorme distancia (6.900 km) entre las áreas de ambas especies proporciona un caso interesante de disyunción geográfica.

INTRODUCTION

A new member of the tribe *Brassicaceae* (*Cruciferae*) from Sokotra island has been described by TOWNSEND (1971) under the basionym *Fabrisinapis fruticosus* Townsend. At first glance, the plant appeared to be an odd member of its tribe with no close relatives (HEDGE, 1976).

METHODS

The description given by TOWNSEND (1971) for *Fabrisinapis fruticosus* has been carefully compared to that of *Hemicrambe fruticulosa* as it appears in MAIRE (1965). Herbarium material from both taxa was studied at Kew Gardens. Living plants of *Hemicrambe fruticulosa* have been observed in the wild (Jbel Moussa, Morocco) and also in cultivation in Madrid. Unfortunately, living plant or seed material from *Fabrisinapis* was not available, but its original description and the

observation of Kew holotype proved to be satisfactory enough for this study.

RESULTS

The fruits of both plants are very similar to each other (fig. 1) and they both differ from all other *Brassicaceae* fruits. The beak or rostrum is flattened and more or less lanceolate, and it contains 1-3 (4) compressed seeds. The lower segment is also flattened, almost completely sterile, and clearly vestigial when compared to the developed valvar portion of many *Brassicaceae*.

Another important similarity consists of the shape of the median nectaries which are corniculate and patent in both taxa (fig. 2). Such

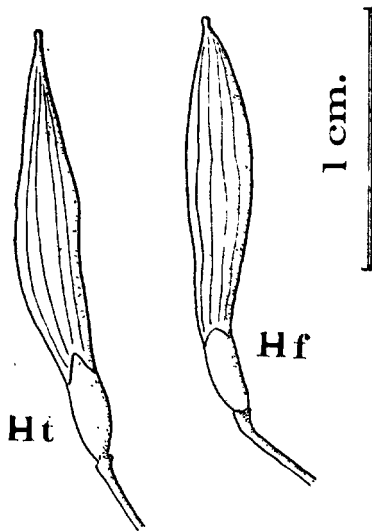


Fig. 1.—Siliques of: Hf, *Hemicrambe fruticulosa* Webb. Ht, *Hemicrambe townsendii* Gómez-Campo (Basionym: *Fabrisinapis fruticosus* Townsend).

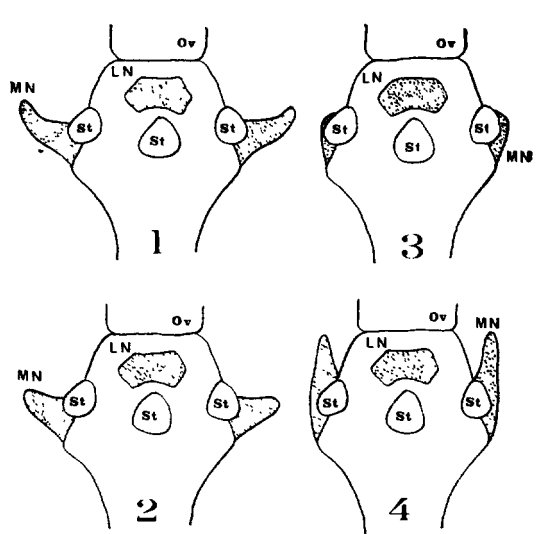


Fig. 2.—MN median nectaries of: 1, *Hemicrambe townsendii* Gómez-Campo (basionym: *Fabrisinapis fruticosus* Townsend). 2, *Hemicrambe fruticulosa* Webb. 3, most *Brassicaceae* (common reduced type). 4, some *Brassicaceae* (corniculate). Other abbreviations: Ov, ovary. St, stamens. LN, lateral nectaries. The plane of the septum corresponds to the plane of the sheet.

situation cannot be found in other *Brassicaceae*, where median nectaries are most often reduced in shape, but when they are corniculate they show an erect position. With the only exception of flower colour (yellow in *Hemicrambe*, white in *Fabrisinapis*), all other flower characters seem to be identical or closely similar.

Both taxa correspond to small perennial shrubs with very similar facies and size. Both grow at altitudes between 600 and 1.000 m in mountain rocks and cliffs never far from the coast.

The combination of characters defined by the sentence «perennial shrub with patent median nectaries and with flattened siliquae where the upper segment is more developed than the lower segment» can only be applied to the two taxa under consideration. Other *Brassicaceae* with seed-bearing developed beaks (as many *Raphaninae*) have usually terete fruits and are either annual or biennial. If perennial (*Crambe*) they have roundish upper segments.

Apart from flower colour, some other slight differences are to be noted. Leaves are somewhat bigger and more deeply lobed in *Hemicrambe fruticulosa*. Though the stigma is capitate in both cases, it shows a tendency to be divided in immature pistils of *Fabrisinapis*. The young fruits of only this taxon are slightly curved. Also the upper segment have a slightly different silhouette (fig. 1). Future studies might demonstrate quantitative differences in the occasional fertility of the lower segment.

DISCUSSION

In the opinion of the author of this article, the above differences are not deep enough to justify the existence of two separate genera, so that both taxa should deserve a taxonomic treatment within a common generic denomination. The differences become still more irrelevant when they are contemplated in the context of other coincident characters as fruit structure, nectary shape, plant habit, etc. So far, chromosome number has not been scored in *Fabrisinapis*, but even in the case that it turns to be different from that of *Hemicrambe* ($n = 9$, White, personal communication, 1975) it is felt that it would still be insufficient to maintain a generic separation.

After the above considerations, it is formally proposed the new name *Hemicrambe townsendii* nom. nov. for the plant described under the basionym *Fabrisinapis fruticosus* Townsend, *Hooker's Icones plant*, 7: 1 (1971), th. 3673. The possibility of using the combination *Hemicrambe fruticosa* (Townsend) comb. nov. has been rejected by obvious reasons (the coexistence of the practically homonymes *H. fruticosa* and *H. fruticulosa* would bring a continuous source of confusion). The new name is dedicated to C. C. Townsend who first described the taxon.

H. fruticulosa grows in some mountains of the Tangier peninsula (Beni Hosmar, Moussa, Kelti), while *H. townsendii* grows in Sokotra island (Gulf of Aden). Approximately 6.900 km separate their geographical areas, and no close relative is known to live in between. This striking phyto-geographical behaviour has an interpretation in the series of events that have strongly affected the Mediterranean flora (GÓMEZ-CAMPO, 1974) since late Miocene. The southwards derivation of the equator and subsequent increase in seasonal climatic variations, the temporal dissication of the Mediterranean sea, the influence of quaternary glaciations and the recent desertization of the Sahara, extinguished a high number of ancient species and forced others to evolve. Survival at both ends of the area was probably favored by the buffering effect of the seas over temperature.

While the evolutionary radiation of the sub-tribe *Raphaninae* (with reduced fruits and/or developed seed-bearing rostra) in the S. W. Mediterranean region seems to be a relatively recent event, the case of *Hemicrambe* may be indicating us that beak development itself is actually very antique in the *Brassicaceae*. A similar conclusion could be reached through the consideration of the geographic area of *Crambe*, a genus with highly evolved fruits. There are some 13 *Crambe* species in the Macaronesia, 16 in the Middle East and adjoining regions, and only 4 in intermediate areas. Whether or not *Hemicrambe* has something to do with the ancestry of *Crambe* is unclear, but at least phenetically it is in a half way position that Webb cleverly pinpointed when he defined and gave a name to the genus.

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